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PATENT**RECEIVED**
CENTRAL FAX CENTER

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Andrew Soutar et al.
Serial No. 10/099,936
Filed March 13, 2002
Confirmation No. 3281
For PRINTED CIRCUIT BOARD MANUFACTURE
Examiner Brian K. Talbot

Art Unit 1762

APR 03 2006

April 3, 2006

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Applicants hereby request review of the Office's rejection of claims 18-26 and 32-40 as set forth in the final Office action dated October 6, 2005 and Advisory Action dated February 21, 2006. No fees are believed due with respect to this Request other than the fees accompanying the Notice of Appeal.

ARGUMENTS

The Office's Section 112 rejection of all pending claims 18-26 and 32-40 for lack of support is based on clear legal and factual deficiencies and is therefore appropriate for review and remedy by the Pre-Appeal Brief Conference Pilot Program. As discussed below, the legal deficiency is that the Examiner is, in essence, requiring literal support, rather than support which "reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter" according to the proper standard. The factual deficiency is that there is, in fact, support for the subject terms in the original specification.

The basis for the examiner's rejection is the Office's assertion that the "fatty amides" and "oxidant" are not supported in the application. All claims 18-26 and 32-40 require the "fatty amides." Only claims 20, 23, 26, 34, 37, and 40 require "oxidant," so for convenience these can be evaluated separately.

I. Claims 18, 19, 21, 22, 24, 25, 32, 33, 35, 36, 38, 39

Written description support for "fatty amides" is found at page 22, line 13 [Paragraph 0072 of published application No. US 2002/0150692]:

"(a) fatty acid amines, preferably having at least 6 carbon atoms, most preferably at least 10 carbon atoms and generally no greater than 30 carbon atoms, they may be primary, secondary, tertiary, diamines, amine salts, amides, ethoxylated amines, ethoxylated diamines, quaternary ammonium salts, quaternary diammonium salts, ethoxylated quaternary ammonium salts, ethoxylated amides and amine oxides. Examples of the primary, secondary and tertiary amine type corrosion inhibitors are ARMEEN™ to (™ denotes trademark). Examples of the subsequent amine type corrosion inhibitors are respectively DUOMEEN™, ARMAC™/DUOMAC, ARMID™, ETHOMEEN™, ETHODUONEEN™, ARQUAD™, DUOQUAD™, ETHOQUAD™, ETHOMID™, AROMOX™, all supplied by Akzo Chemie." (Emphasis added.)

This paragraph states "they may be ... amides" "They" clearly refers back to the "fatty acid amines." So the "amides" linked to the "fatty acid amines" by "they" must also be "fatty." An amide is, by definition, "a product of a reaction between a carboxylic acid and an amine." If an amine is "fatty," its corresponding amide must also be "fatty." That is, the reaction from an amine to an amide does not destroy the compound's long hydrocarbon chain, so the corresponding amide compound is also "fatty." It is asserted in the Advisory action that this is only "suggested." This is incorrect. By definition a "fatty amine" is derived from "fatty acid" and "[a]ll fatty acids are composed of a chain of alkyl groups containing from 4 to 22 carbon atoms...;" see, e.g., the attached definitions of "fatty acid" and "fatty amine" from Hawley's Condensed Chemical Dictionary.

Accordingly, one skilled in the art would understand "amides" at page 22, line 13 to be referring to amides which are, in fact, fatty, such that "fatty amides" is supported literally. And, in particular, one would understand applicants to have been in

possession of the invention comprising silver plating with a composition comprising among other components, fatty amides, for solderability enhancement.

Moreover, even if the cited passage of the specification were deemed to fall short of literal support, claim language is supported if the disclosure "reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter." *Lampi Corp. v. American Power Products Inc.*, 56 USPQ2d 1445, 1455 (Fed. Cir. 2000). It is not necessary that the claim language such as "fatty amides" be supported in exact terms:

[W]e are mindful that appellant's specification need not describe the claimed invention in *ipsis verbis* to comply with the written description requirement. The test is whether the originally filed specification disclosure reasonably conveys to a person having ordinary skill that applicant had possession of the subject matter later claimed. *In re Sorenson*, 3 USPQ2d 1462, 1463 (BPAI 1987).

The claim language under scrutiny in *Sorenson* included "copper complexes of imines," "binuclear copper complexes of carboxylic acids," and "a binuclear copper complex of an aliphatic carboxylic acid or binuclear copper complex of an aryl carboxylic acid." *Sorenson*, 3 USPQ2d at 1463. The examiner in *Sorenson* acknowledged that the specification contained broader expressions that encompassed the claim language at issue, including "an organic compound of copper", "copper complexes of carboxylic acids," "copper complex of an aliphatic carboxylic acid," and the "copper complex of an aryl carboxylic acid". The examiner nonetheless rejected the claims for failing to satisfy the written description requirement. The Board reversed and found that, although the specification did not use the exact language found in the claims, the disclosure as a whole reasonably conveyed to the skilled artisan that the applicant had possession of the claimed subject matter. *Id.* at 1463-64.

Here, a skilled artisan reading the specification's disclosure of "fatty amines," which "may be...amides," would immediately

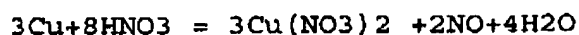
recognize that applicants had possession of an immersion silver plating solution comprising a fatty amide additive. The written description requirement of Section 112 is satisfied.

II. CLAIMS 20, 23, 26, 34, 37, and 40

Written description support for "oxidant" is provided, for example, by the numerous references in the original specification to "nitric acid" as a component of the plating composition (E.g., paragraphs 0086, 0103, 0123, and 0125). Nitric acid is a known oxidant and a known oxidant for copper:

U.S. PAT. 4,846,918, Col. 1, lns 58-64

In the nitric acid etching chemistry disclosed in U.S. Pat. Nos. 4,497,687 and 4,545,850, nitric acid reacts with copper according to the relationship



with the nitric acid serving both as an oxidant and as an anion source for the dissolved copper.

U.S. PAT. 5,362,712; Claim 1

1. . . . to dissolve the copper mold . . . nitric acid is simultaneously used as said mineral acid and said oxidizing agent

U.S. PAT. 5,037,482; Col. 5, lns 23 ff.

The oxidizer must be of a type, and present in an amount, sufficient to provide in cooperating interaction with the surfactant, a controlled conversion of the copper surface from a substantially smooth surface to a substantially clean, substantially uniformly micro-roughened surface, so that the bonding characteristics of the copper surface are substantially increased for securely adhering a subsequently applied coating to the copper surface, without at the same time removing the copper surface itself from the underlying substrate to which it is adhered. An oxidizing agent which is too active, and/or which is used in too substantial concentrations, not only runs the risk of uncontrolled stripping of the copper surface from its underlying substrate, but more

importantly has been found ineffective to produce the required micro-roughened topography on the remaining copper surface. Results such as this have been found with compositions containing nitric acid as the oxidizer. Even where complete stripping is avoided, the remaining copper surface is nevertheless surprisingly smooth and unacceptable for promoting adhesion of subsequently applied coatings. [Nitric acid was discussed in the context of the prior art; and the inventors preferred methane sulfonic acid over nitric acid.]

Nitric acid in the context of these solutions is well understood to provide nitrate ions which facilitate oxidization of Cu to Cu^{+1} and/or Cu^{+2} by the most basic of chemical re-dox reactions.

In light of the state of the knowledge in the art, the specification's disclosure of "nitric acid" - a known oxidant for copper - reasonably conveys to the artisan that applicants had possession of immersion silver plating solutions comprising an oxidant. Therefore, the written description requirement of Section 112 is satisfied.

CONCLUSION

In view of the above, applicants respectfully request that the Panel issue a decision allowing the application on the existing claims 18-26 and 32-40.

Respectfully submitted,



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Hawley's
Condensed Chemical
Dictionary

TWELFTH EDITION

Revised by
Richard J. Lewis, Sr.



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FATTY ACID

namo. Faraday was in many respects the exemplar of a true scientist, combining meticulous effort and interpretive genius.

faraday. The quantity of electricity that can deposit (or dissolve) one gram-equivalent weight of a substance during electrolysis (approximately 96,500 coulombs).

farnesol. (generic name for 3,7,11-trimethyl-2,6,10-dodecatrienol). CAS: 4602-84-0.
 $C_{15}H_{22}OH$.

Properties: Colorless liquid, delicate floral odor, soluble in three volumes of 70% alcohol, $d 0.885$ (15°C), bp 145–146°C (3 mm Hg). Combustible.

Derivation: Found in nature in many flowers and essential oils such as cassia, neroli, cananga, rose, balsams, ambrette seed.

Use: Perfumery, flavoring, insect hormone.

fast. (1) Descriptive of a dye or pigment whose color is not impaired by prolonged exposure to light, steam, high temperature, or other environmental conditions. Inorganic pigments are normally superior in this respect to organic dyes. (2) In nuclear technology, the term refers to neutrons moving at the speed at which they emerge from a ruptured nucleus, as opposed to "slow" or thermal neutrons whose speed has been reduced by impinging on a neutral substance called a moderator. Fast neutrons are used in breeder reactors.

fast atom bombardment. (FAB). One of several techniques for ionizing solids from solutions. In FAB, a thin film of the dissolved solid to be analyzed is bombarded with fast atoms. These dislodge ions by impact, which are then analyzed by mass spectroscopy. Peptide ions with a molecular weight of approximately 6000 have been produced and analyzed by this method.

fat. A glyceryl ester of higher fatty acids such as stearic and palmitic. Such esters and their mixtures are solids at room temperatures and exhibit crystalline structure. Lard and tallow are examples. There is no chemical difference between a fat and an oil, the only distinction being that fats are solid at room temperature and oils are liquid. The term "fat" usually refers to triglycerides specifically, whereas "lipid" is all-inclusive.

See also lipid.

fat dyes. Oil-soluble dyes for candles, wax, etc.

fatigue. Incremental weakening of a material as a result of repeated cycles of stresses that are far lower than its breaking load, ending in failure. For metals, to which the term usually refers, the

number of low-stress cycles may be of the order of 10^7 . Failure is due to development of cumulative imperfections in the crystal structure, with consequent minute interior cracks. Gear failure is often caused by fatigue. It has been reported in experimental windmills for power generation in which steel blades have failed after a few hundred hours of operation due to centrifugal stress. In elastomeric materials, fatigue involves complete dissipation of their resilient energy by repeated cycles of low-order stresses.

fat liquoring agent. An oil-in-water emulsion usually made from raw oils such as neatsfoot, cod, etc., made soluble by dispersing agents such as sulfonated oils.

Use: Leather processing to replace natural oils removed from hides by tanning operations. See also neatsfoot oil, emulsion.

fat splitting. See hydrolysis.

fatty acid. A carboxylic acid derived from or contained in an animal or vegetable fat or oil. All fatty acids are composed of a chain of alkyl groups containing from 4 to 22 carbon atoms (usually even-numbered) and characterized by a terminal carboxyl group $-COOH$. The generic formula for all above acetic is $CH_3(CH_2)_nCOOH$ (the carbon atom count includes the carboxyl group). Fatty acids may be saturated or unsaturated (olefinic), and either solid, semi-solid, or liquid. They are classed among the lipids together with soap and waxes.

Saturated: A fatty acid in which the carbon atoms of the alkyl chain are connected by single bonds. The most important of these are butyric (C_4), lauric (C_{12}), palmitic (C_{16}), and stearic (C_{18}). They have a variety of special uses (see specific entry). Stearic acid leads all other fatty acids in industrial use, primarily as a dispersing agent and accelerator activator in rubber products and in soaps.

Unsaturated: A fatty acid in which there are one or more double bonds between the carbon atoms in the alkyl chain. These acids are usually vegetable-derived and consist of alkyl chains containing 18 or more carbon atoms with the characteristic end group $-COOH$. Most vegetable oils are mixtures of several fatty acids or their glycerides; the unsaturation accounts for the broad chemical utility of these substances, especially of drying oils. The most common unsaturated acids are oleic, linoleic, and linolenic (all C_{18}). Safflower oil is high in linoleic acid, peanut oil contains 21% linoleic acid, olive oil is 38% oleic acid, palmitoleic acid is abundant in fish oils. Aromatic fatty acids are now available. See phenylstearic acid.

Note: Linoleic, linolenic, and arachidonic acids are called essential fatty acids by biochemists be-

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cause such acids are necessary nutrients that are not synthesized in the animal body.

Use: Special soaps, heavy-metal soap, lubricants, paints and lacquers (drying oils), candles, salad oil, shortening, synthetic detergents, cosmetics, emulsifiers.

For further details, refer to Fatty Acid Producers Council, 475 Park Ave. South, NY, NY 10016.

fatty acid enol ester. A fatty acid reacted with enolic form of acetone for the purpose of increasing the chemical reactivity of the acid. Stearic acid (18-carbon) combined with acetone (3-carbon) gives isopropenyl stearate (21-carbon). This is effective in making the fatty stearyl group available for synthesis of polymers, medicinals, and the like.

See also fatty ester.

fatty acid pitch. A by-product residue from (1) soap stock and candle stock manufacture, (2) refining of vegetable oils, (3) refining of refuse greases, (4) refining of wool grease.

Properties: Dark brown to black, properties analogous to complex hydrocarbons, contains fixed carbon (5-35%), soluble in naphtha and carbon disulfide.

Use: Manufacture of black paints and varnishes, tarred papers, printers' rolls, rubber filling agent, impregnating agent, electrical insulations, marine caulking, waterproofing, sealant.

fatty alcohol. A primary alcohol (from C_8 to C_{20}), usually straight chain. High-molecular weight-alcohols are produced synthetically by the Oxo and Ziegler processes. Those from C_8 to C_{11} are oily liquids; those greater than C_{11} are solids. Other methods of production are (1) reduction of vegetable seed oils and their fatty acids with sodium, (2) catalytic hydrogenation at elevated temperatures and pressures, and (3) hydrolysis of spermaceti and sperm oil by saponification and vacuum fractional distillation. The more important commercial saturated alcohols are octyl, decyl, lauryl, myristyl, cetyl, and stearyl. The commercially important unsaturated alcohols, such as oleyl, linoleyl, and linolenyl, are also normally included in this group. The odor tends to disappear as the chain length increases.

Use: Solvent for fats, waxes, gums and resins; pharmaceutical salves and lotions, lube oil additives, detergents and emulsifiers, textile anti-static and finishing agents, plasticizers, nonionic surfactants, cosmetics.

fatty amine. A normal aliphatic amine derived from fats and oils. May be saturated or unsaturated, primary, secondary or tertiary, but the alkyl groups are straight-chain and have an even

number of carbons in each. The length varies from 8 to 22 carbon atoms.

Derivation: Fatty acids are treated with ammonia and heated to form fatty acid amides which are converted to nitriles and reduced to the amine.

Use: Organic bases, soaps, plasticizers, tire cords, fabric softeners, water-resistant asphalt, hair conditioners, cosmetics, medicinals.

fatty ester. A fatty acid with the active hydrogen replaced by the alkyl group of a monohydric alcohol. The esterification of a fatty acid, $RCOOH$, by an alcohol, $R'OH$ yields the fatty ester $RCOOR'$. The most common alcohol used is methanol, yielding the methyl ester $RCOOCH_3$. The methyl esters of fatty acids have higher vapor pressures than the corresponding acids and are distilled more easily.

fatty nitrile. (RCN). An organic cyanide derived from a fatty acid.

Derivation: Fatty acids are treated with ammonia and heated to form fatty acid amides which are converted to nitriles.

Use: Intermediates for fatty amines, lube oil additives, plasticizers.

faujasite. $Na_2CaO \cdot Al_2O_3 \cdot 5SiO_2 \cdot 10H_2O$.

A mineral.

Use: As a zeolite or molecular sieve.

Favorskii-Babayan synthesis. Synthesis of acetylenic alcohols from ketones and terminal acetylenes in the presence of anhydrous alkali.

Favorskii rearrangement. Base-catalyzed rearrangement of α -haloketones to acids or esters. The rearrangement of α,α -dibromocyclohexanones to 1-hydroxycyclopentanecarboxylic acids, followed by oxidation to the ketones, is known as the Wallach degradation.

FBR. Abbreviation for fast breeder reactor. See breeder.

FCC. (1) Abbreviation for Food Chemicals Codex, a publication giving specifications and test methods for chemicals used in foods. (2) Abbreviation for fluid-cracking catalyst as used in the petroleum refining industry. Examples are powdered silica-alumina in which alumina is impregnated with dry synthetic silica gel and various natural clays impregnated with alumina.

FDA. Abbreviation for Food and Drug Administration.

FD&C color. A series of colorants permitted in food products, marking inks, etc., certified by the FDA. Among the more important are the following:

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